Syllabus

Course Number: MAT214
National College
Revised 3-13-12

MAT214: Algebra

Credit Hours: 4
Prerequisites: PRE041, if applicable

Course Description

Students will learn algebraic problem solving, radicals, quadratic equations, polynomials, inequalities, and applied problem solving.

Instructor Contact Information

Instructor Name	Gerard Arthus
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Course Length

The college evaluates each course in terms of quarter hours of credit. One unit of credit is usually equivalent to a minimum of ten academic instruction hours of lecture and examination, twenty hours of skill development, or thirty hours of internship, or a combination of the three. An academic instructional hour is fifty minutes.

This class will meet for the equivalent of a minimum of four (4) instructional hours per week for eleven (11) weeks or as otherwise scheduled by the college and at least in conformance with this minimum and the Syllabus. As specified under the Method of Instruction section of this Syllabus, the instructor will ensure that minimum total class sessions presented consist of direct faculty instruction or appropriate classroom activity.

All course offerings require outside participation time, which is approximately two hours per lecture instructional hour and/or one hour per skill development instructional hour, depending on the background, interest, abilities, and motivation of the individual student.

Course Objectives

This course is designed to enable the student to learn to solve problems in algebra and to provide the student with an appreciation of the concepts and logical reasoning in this level of mathematics. Types of functions used in this course include polynomial, rational, radical (root/power), exponential, logarithmic, and piecewise-defined functions.

By the end of this course, you should be able to:

1. Reduce, transform, add, subtract, multiply, and divide fractions, decimals, and percents.
2. Add, subtract, multiply and divide signed numbers, and exponents with grouping symbols and variables. Understand sets of numbers and the number line.
3. Solve linear equations with parenthesis and fractions.
4. Solve literal equations.
5. Solve and graph inequalities.
6. Solve absolute value equations.
7. Translate word problems into algebraic equations.
8. Solve word problems comprised of comparisons, formulas, the value of money and percents.
9. Multiply and factor polynomials.
10. Add, subtract, multiply, and divide fractional algebraic expressions.
11. Graph linear equations and inequalities. Graphs of basic functions including the square root and cube root functions, absolute value function, piecewise-defined functions.
12. Use geometric formulas to solve applied problems involving area, perimeter, circumference, and volume.

13. Solve a system of equations by the substitution method, the addition method, and the graphing method.
14. Solve word problems using a system of equations.
15. Add, subtract, multiply, and divide radicals.
16. Solve word problems involving radicals.
17. Solve quadratic equations by factoring, by the square root property, by completing the square, and the quadratic formula.
18. Perform translations and dilations (stretching and shrinking) of functions
19. Apply the factor theorem, the remainder theorem, and the rational roots (rational zeroes) theorem to application problems.
20. Find the inverses of functions and relate the graph of a function to the graph of its inverse.

Gradebook

A student's performance in this course will be evaluated using a variety of factors listed below. Instructors must use a minimum of three (**homework, tests and a final exam are required**), and it is recommended that instructors use all five of the areas in your evaluation.
The exact weight to be given to any particular area is determined by the instructor and will normally fall within the ranges listed below.

Area	Percentage for this Course	Suggested Range
Final Exam	25%	20 – 25%
Tests	40%	20 – 40%
Homework	15%	10 – 15%
Project/Research Paper	10%	20 – 25%
Class Participation	10%	10 – 15%
TOTAL	100%	

Letter Grade	Points	Explanation
A	94-100	Excellent
B	84-93	Above Average
C	74-83	Average
D	64-73	Below Average
F	63 & Below	Failure

Textbook & Instructional Material

Custom Publication for National College taken from:

- John Tobey Jr. and Jeffrey Slater. ***BeginningAlgebra***. 7th edition Upper Saddle River: Pearson Prentice Hall, 2008.

Michael Sullivan, *College Algebra*, 8th edition, Upper Saddle River: Pearson Prentice Hall, 2008.

Instructor's Solution, Test Manual, Prentice Hall Data-Manager

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Course Outline

Note to students: a check beside an activity indicates that your instructor has required that activity for this course

Week 1	
Topics	A Brief Review of Arithmetic Skils
Material Covered	Chapter 0
In Class Activities	Cover Introductory material on Systems and Instructional techniques. We will go over some materials covering video tutorials and there with be some in-class assignments.
Homework	☑ On-line tutorials and assignments. ☐ ☐ ☐
Week 2	
Topics	Real Numbers and Variables & Supplement 1
Material Covered	Chapter 1
In Class Activities	
Homework	☑ On-line tutorials and assignments. ☐ ☐ ☐
Week 3	
Topics	Equations and Inequalities
Material Covered	Chapter 2
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 4	
Topics	Solving Applied Problems
Material Covered	Chapter 3
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 5	
Topics	Exponents and Polynomials Supplement 2 & 3
Material Covered	Chapter 4
In Class Activities	
Homework	☐ ☐

	☐ ☐
Week 6	
Topics	Factoring
Material Covered	Chapter 5
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 7	
Topics	Rational Expressions and Equations Supplement 4 & 5
Material Covered	Chapter 6
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 8	
Topics	Systems of Equations
Material Covered	Chapter 7
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 9	
Topics	Radicals
Material Covered	Chapter 8
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 10	
Topics	Graphing and Functions Quadratic Equations; Supplement 6
Material Covered	Chapter 9, 10
In Class Activities	
Homework	☐ ☐ ☐ ☐
Week 11	
Final	**In-Class Final Exam/Presentations**

During terms that include less than 11 weeks, instructional time will be changed to accommodate all materials, resources, research activities, etc.

Method of Instruction

Instructional techniques must be appropriate, and at a collegiate level, to the specific goals and objectives, i.e. intended learner outcomes, cited above. Students and instructors must have a clear understanding of the intended learner outcomes to be mastered and time requirements of the course, the nature of the course context, and the method of evaluation.

The method of instruction is primarily lecture and provides instruction in theory, principles, or practices of the discipline. The instructor will provide classroom presentations in a variety of lecture formats. Methods of instruction must fulfill the intended learner outcomes and competencies stated in the course goals and objectives and are appropriate to the capabilities of the students. For career oriented courses, the instructor must demonstrate that an effective relationship exists between curricular content and current practices in the field.

Effective instruction depends largely upon the maintenance of an environment conducive to study and learning. For this reason, the instructor must provide for his/her students a learning environment in which scholarly and creative achievement is encouraged in the classroom.

Additional Class Notes

Go to http://www.openeducation.org/moodle to use the Web-Assisted site for this course. Quizzes and discussion forums will be completed on-line at this site.